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# *Dicranopygium callithrix* (Cyclanthaceae), a New Species from the Cauca Valley, Colombia

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**ABSTRACT.** *Dicranopygium callithrix*, a new species of Cyclanthaceae, is described from the northern end of the Cauca Valley in western Colombia. It belongs to subgenus *Dicranopygium*, section *Dicranopygium*. Its very long white staminodes, combined with other floral and foliar characters, distinguish it from all other described species of this genus. *Dicranopygium callithrix* is the only species of *Dicranopygium* known from the Cauca Valley and may be endemic there. It is in danger of extinction.

**RESUMEN.** *Dicranopygium callithrix*, una nueva especie de Cyclanthaceae, se describe, procedente del extremo septentrional del valle geográfico del río Cauca, en la parte occidental de Colombia. La nueva especie pertenece al subgénero *Dicranopygium*, sección *Dicranopygium*. Sus estaminodios blancos y muy largos, combinados con otros caracteres florales y foliares, la distinguen de todas las otras especies descritas de este género. *Dicranopygium callithrix* es la única especie de *Dicranopygium* que se conoce del valle geográfico del río Cauca, y es posible que sea endémica allí. Está en peligro de extinción.

**Key words:** Cauca Valley, Colombia, Cyclanthaceae, *Dicranopygium*.

The genus *Dicranopygium* Harling comprises about 50 known species, distributed from Mexico to Suriname, Peru, and Brazil (Harling & Eriksson, 1998). These plants usually grow adjacent to or in small streams within forest; most species are found in lowlands. Harling (1958) noted that the pollinators of *Dicranopygium* probably are weevils (Coleoptera: Curculionidae) and that the seeds may be dispersed by water.

*Dicranopygium* is the second largest genus in the family Cyclanthaceae and probably includes several undescribed species. The species described here was discovered during a floristic inventory for the checklist of the relictual forest flora of the Cauca Valley.

***Dicranopygium callithrix*** Silverstone-Sopkin,

sp. nov. TYPE: Colombia. Risaralda: Mun. Pereira, Hacienda Alejandría, km 7 Cerritos–La Virginia road, N end of Cauca Valley, low hills, ca. 950–960 m, 4°51'27"N, 75°52'49"W, 12 Nov. 2001, P. A. Silverstone-Sopkin, N. Paz, H. Sanint et al. 8813 (holotype, CUVC #33394 [leaf], 33395 [inflorescence] [see Greuter et al., 2000: Art.8.3 ex. 4]; isotype, COL). Figure 1.

A sex speciebus aliis generis *Dicranopygii* quae staminodia longa habent combinatione sequenti characterum distinguitur: longitudine petiolorum et foliorum, latitudine segmentorum foliorum, profunditate sinus foliorum, foliis unicostatis, receptaculo florum masculinorum plano, longitudine filamentorum et antherarum, tepalis florum femineorum sine glandibus, spathis et staminodiis albis.

Terrestrial herbs, lacking aerial stem or with short prostrate aerial stem. Leaf blades unicostate, (48–)71–104 cm long, bifid (34–)41–51(–65)% of their length, base unequal, cuneate, segments 4.5–12.7 cm wide at base of sinus, lanceolate, tips attenuate to acuminate; petiole (25–)50–109(–133) cm long. Peduncle during anthesis 13–27 cm long, in fruiting stage 20.5–50 cm long; spathes 3 or 4, white and concave on adaxial surface, green on abaxial surface, caducous; lowermost (outermost) spathe 5.4–10 cm long, 2.3–2.4 cm wide at base, long-triangular, attenuate to acuminate; upper (inner) spathes 3.6–7.2 × 1.8–4.5 cm, ovate to lanceolate, acuminate to acute; spadix cylindrical, during anthesis 2–3 × 1–1.6 cm, in immature fruiting stage 2.5–6 × 1–2.3 cm. Staminate flowers pedicellate, seen from above 2.3–4.5 mm median width, 1.8–3 mm lateral width, trapezoidal; receptacle 1.8–2 mm wide, flattened above; perianth lobes 5 to 7, present only on one side of flower, 1 × 0.6 mm, oblong, tip acute to obtuse, glanduliferous; stamens white, 24 to 35 per flower; anthers 0.8 × 0.7 mm, connective narrow, thecae not divergent, filaments ca. 0.2 mm long, basal bulbs ca. 0.5–0.7 × 0.5 mm, oblong, somewhat flattened on abaxial and adaxial surfaces. Pistillate flowers seen from above during anthesis 3.5 mm median width, 3.5 mm lateral width, in immature fruiting stage to 7–9.5 mm median width, 7–9.5 mm lateral width;

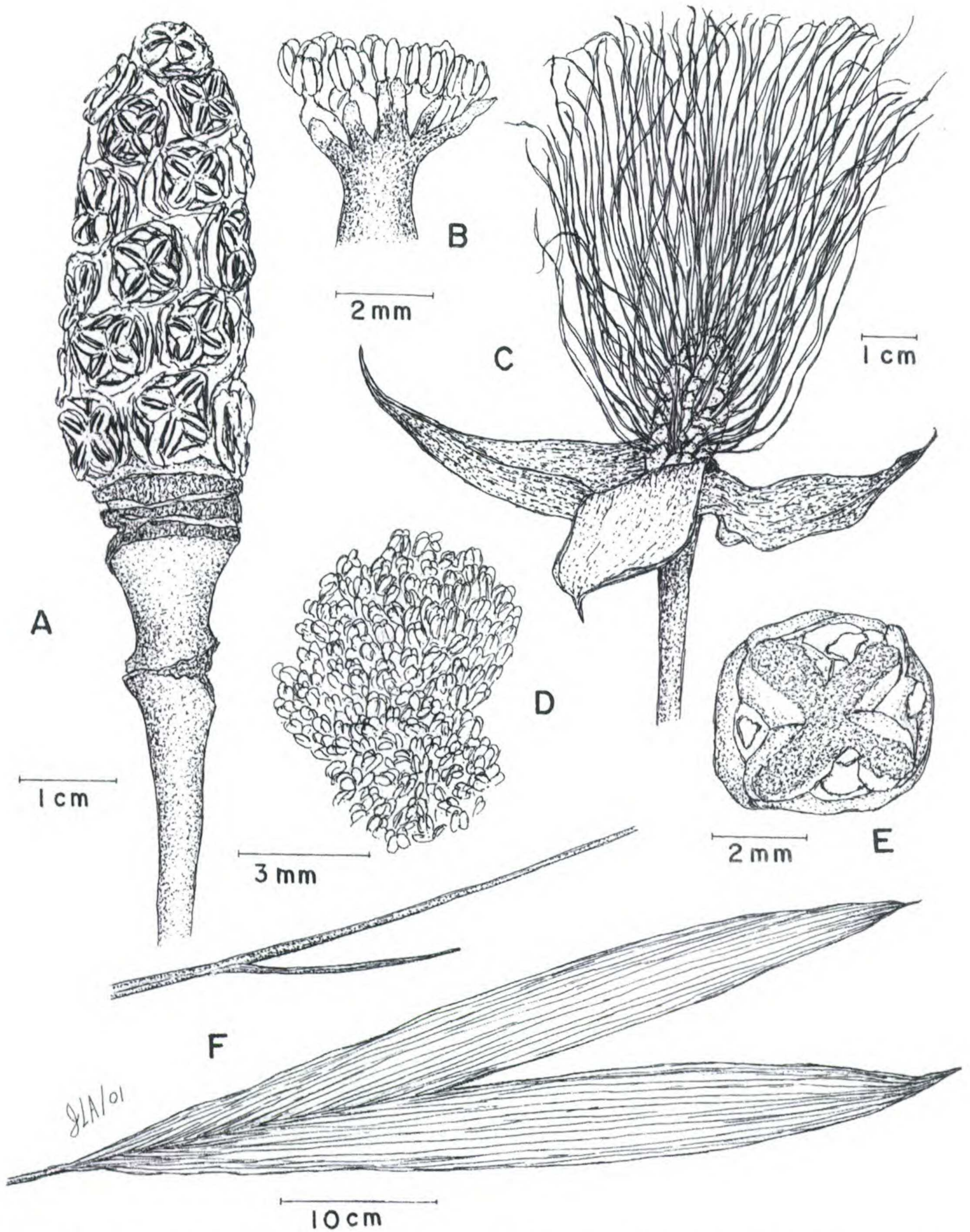


Figure 1. *Dicranopygium callithrix* Silverstone-Sopkin. —A. Immature infructescence, including upper part of peduncle with four spathe scars. —B. Staminate flower (lateral view). —C. Inflorescence at anthesis with staminodes. —D. Group of three staminate flowers (seen from above). —E. Pistillate flower (seen from above), showing tepals, stigmas, and staminode scars. —F. Petiole (with sheath) and leaf blade. Based on the holotype, P. A. Silverstone-Sopkin, N. Paz, H. Sanint et al. 8813 (CUVC).

tepals during anthesis ca. 0.8 mm long, 2.5–3 mm wide, in immature fruiting stage ca. 1.5 mm long, 4–8.5 mm wide, tip truncate, not glanduliferous; stigmas sessile, slightly convex, not laterally compressed, ellipsoid to suborbicular seen from above, tips rounded, not projecting between tepals; staminodes white, 6–10.8 cm long. Mature fruits and seeds not seen. (Floral measurements were made from material preserved in 70% ethanol and 5% glycerin; other measurements were made from dried material.)

I observed that the inflorescence emitted a strong, pleasant odor at anthesis; the flowers were visited by small curculionid beetles. Flowers of Cyclanthaceae are generally protogynous (Harling, 1958). The type material was collected at the pistillate phase; thus anther dehiscence was not observed, but is expected to be latrorse (as in all species of section *Dicranopygium*).

*Etymology.* From the Greek, *calli-*, beautiful, and *thrix*, hair, referring to the long, white, showy staminodes. The specific epithet is a noun in apposition (Greuter et al., 2000: Art. 23.5).

*Distribution and habitat.* *Dicranopygium callithrix* is known only from the extreme northern end of the Cauca Valley, near the town of La Virginia, at the Hacienda Alejandría and the adjacent Hacienda Córcega, 950–970 m. It was probably more widespread in the past, but the almost total destruction of forests in the Cauca Valley has eliminated most of the suitable habitats. I have not found it in any of the few other small patches of forest that remain in the Cauca Valley, but it might still occur in forest patches in the piedmont of the western slope of the Cordillera Central.

In the Holdridge system, the plant formation at the type locality is tropical dry forest (mean annual precipitation at the adjacent Hacienda La Bohemia is 1764 mm), but the microclimate at the collection site (within the gallery forest) certainly is more humid; the epiphytic melastome *Blakea* and the arborescent fern *Cyathea* are found here (and nowhere else in the Cauca Valley).

The habitat at the type locality and at the Hacienda Córcega is an “artificial” gallery forest, bordering a creek. This whole region was formerly forested, but most of the forest was cut, beginning in 1915, to create pasture for cattle-raising (Hilda Sanint, pers. comm.). The forest along these creeks was spared because the steep slopes along the banks were not suitable for cattle. These creeks are shallow, narrow, and slow-flowing, with many rocks. Individuals of *D. callithrix* are found only on the edges of and within the creeks, shaded by the gal-

lery forest. This is the typical habitat of the genus *Dicranopygium*.

*Discussion.* *Dicranopygium callithrix* belongs to subgenus *Dicranopygium*, section *Dicranopygium*; this is indicated by its unicostate leaves, staminate flowers with unilateral glandular perianth lobes and flattened receptacle, relatively short anthers with a narrow connective and parallel thecae, and pistillate flowers with broad (not compressed and aliform) stigmas.

*Dicranopygium callithrix* is unusual in its long, showy staminodes, much longer than those of most species of the genus (staminode length is not known in some species). Only six known species of *Dicranopygium* approach *D. callithrix* in staminode length (6 cm or more); three of these are known only from the Amazonian lowlands (one from Colombia and two from Ecuador). One of these, *D. lugonis* Harling, belongs to another section, *Adenotepalum*, characterized by tricostate leaves and glanduliferous tepals in the pistillate flowers, features lacking in *D. callithrix*. The other two, *D. aurantiacum* (R. E. Schultes) Harling and *D. comapyrrhae* (Harling) Harling, have bright yellow or red-orange staminodes, and the latter has yellow to yellow-red spathes, whereas the staminodes and spathes are white in *D. callithrix*. *Dicranopygium aurantiacum* also differs from *D. callithrix* in its much narrower (0.6 cm wide) leaf segments and much more deeply bifid leaves (to 83%), and *D. comapyrrhae* differs in its longer stamen filaments (0.3–0.4 mm long).

*Dicranopygium fissile* Galeano & Bernal was described from the piedmont (1100 m) of the eastern side of the Cordillera Central in Colombia. It resembles *D. callithrix*, but petioles are 44–50 cm long in *D. fissile*, (25–)50–109(–133) cm long in *D. callithrix*; leaf blades are 47–55 cm long in *D. fissile*, (48–)71–104 cm long in *D. callithrix*; anthers are 0.9–1.3 mm long in *D. fissile*, 0.8 mm long in *D. callithrix*; filaments are 0.3–0.5 mm long in *D. fissile*, ca. 0.2 mm long in *D. callithrix*; staminodes are 6 cm long in *D. fissile*, 6–10.8 cm long in *D. callithrix*.

*Dicranopygium arusisense* Tuberquia and *D. odoratum* Tuberquia are known only from the Pacific coast of Colombia; their staminodes are longer (12 cm) than those of *D. callithrix*. *Dicranopygium callithrix* differs from both species in having longer petioles ([25–]50–109[–133] cm vs. 10–26 cm in *D. arusisense* and 22–35 cm in *D. odoratum*), shorter anthers (0.8 mm vs. 1–1.5 mm in *D. arusisense* and 1.3–1.6 mm in *D. odoratum*), and white staminodes (red in *D. arusisense*, yellow in *D. odoratum*). In addition, *D. callithrix* differs from *D. aru-*

*sisense* in the flat upper surface of the receptacle of the male flowers (deeply sunken in *D. arusisense*) and in its parallel anther thecae (divergent in *D. arusisense*); *D. callithrix* also differs from *D. odoratum* in its white spathes (purple-red in *D. odoratum*).

*Dicranopygium callithrix* resembles (and in Harling [1958, 1973] keys out to) *D. calimense* Harling, *D. grandifolium* Harling, and *D. rheithrophilum* (Harling) Harling; all three species are found west of the Andes in Colombia and Ecuador, and *D. grandifolium* also is found in Venezuela. The leaves of *D. callithrix* are bifid from one-third to two-thirds of their length. This range of variation encompasses that of all three similar species, but the leaf blades and petioles of *D. callithrix* are much longer than those of *D. calimense* and *D. rheithrophilum* (*D. calimense*: leaf blades and petioles each 35–40 cm, *D. rheithrophilum*: leaf blades 15–35 cm, petioles to 30 cm). The leaf blades and petioles of *D. grandifolium* are longer than those of the other two species, and the range of variation (leaf blades and petioles each 35–75 cm long) overlaps that of *D. callithrix*. *Dicranopygium callithrix*, however, has staminate flowers with more numerous perianth lobes (5 to 7) than *D. calimense* (4 to 5) and *D. grandifolium* (3 to 5), and differs from all three species in its numerous stamens (24 to 35) and much longer staminodes (6–10.8 cm); in *D. calimense*, *D. grandifolium*, and *D. rheithrophilum* stamen number is 9 to 16, 12 to 18, and 15 to 25, and staminode length is 3–4 cm, 2.5–3 cm, and 2–3 cm, respectively.

There is no doubt as to the subgeneric and sectional placement of *Dicranopygium callithrix*. Its relationships to the other species of the section *Dicranopygium* are unknown (as is the case with many species of this section), and its resemblance in certain morphological characters to the species mentioned above does not necessarily indicate a close relationship.

It should also be noted that, apart from the widespread bird-dispersed species *Carludovica palmata* Ruiz & Pavón, *D. callithrix* is the only species of Cyclanthaceae that my colleague Jorge E. Ramos-Pérez and I have encountered in the Cauca Valley during 17 years of fieldwork here. If Harling's (1958) hypothesis that *Dicranopygium* is dispersed by water in streams is correct, then it is not surprising that Chocoan and Amazonian species of this genus are not found in the Cauca Valley, and it is

quite likely that *D. callithrix* is endemic to the Cauca Valley and perhaps part of the adjacent piedmont of the Central Cordillera. Without doubt, it is a species in danger of extinction. It could be categorized tentatively as EN (endangered) (Calderón et al., 2002).

*Paratypes.* COLOMBIA. **Risaralda:** Mun. Pereira, Hacienda Córcega, 18 km by road from La Virginia, 7 km W of Cerritos–La Virginia road, N end of Cauca Valley, ca. 4°50'N, 75°53'W, 28 Nov. 1989, P. A. Silverstone-Sopkin, J. E. Giraldo-Gensini & H. M. Cabrera-Arana 5754 (CUVC, FMB, JAUM, MO), 30 Dec. 1994, P. A. Silverstone-Sopkin & N. Paz 7244 (COL, CUVC); Hacienda Alejandría, km 7 Cerritos–La Virginia road, N end of Cauca Valley, 4°51'27"N, 75°52'49"W, 6 July 1995, P. A. Silverstone-Sopkin & H. Berrío-Baca 7714 (CTES, CUVC, HUA, TULV), 26 Jan. 1997, P. A. Silverstone-Sopkin, N. Paz et al. 7831 (CUVC).

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